MultiMobile™

Model MT56128ZLX-NT
Model MT56128ZLX-ST

Multifunction
ISDN/Modem PC Card

Owner's Manual

MultiTech® Systems

Owner's Manual

MultiMobile™

Model #MT56128ZLX-NT & MT56128ZLX-ST

P/N 82076503

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MultiMobile™

Chapter 1—Introduction/Description

MultiTech® Systems

Congratulations on your purchase of the MultiMobile ISDN/Modem PC Card. The MultiMobile (models MT56128ZLX-NT and MT56128ZLX-ST) is the only multifunction PC Card in the world that offers seamless connection between digital ISDN lines and analog telephone lines (PSTN) within one single PC Card.

Its peerless switchable technology integrates both ISDN terminal adapter (TA) and today's fastest 56K fax/modem technologies. Users can switch between digital ISDN or analog PSTN connections simply by plugging in bundled network connection cables. In addition to its unique switchable ability, the MultiMobile features an *ISDN Phone* voice capability.

Features

- Switchable ISDN line or analog telephone line (PSTN) connection
- 56K modem or G3 fax connections over both analog telephone and ISDN lines
- Built-in microphone/speakerphone interface for *ISDN Phone* voice applications
- Options for ISDN S/T-interface or U-interface
- Complies with prevalent ISDN software standards such as ISDN AT commands, NDIS WAN, and CAPI 2.0
- Microsoft Plug-and-Play compatible
- Menu-driven configuration utility included

Technical Specifications

Trade Name

- MultiMobile™

Model Numbers:

- MT56128ZLX-NT (U-interface)
- MT56128ZLX-ST (S/T-interface)

System Requirements

- Intel 486, Pentium, or above (Pentium strongly recommended)
- 30 MB free space
- One Type II or Type III PCMCIA slot
- Windows 95, OSR2, 98 or Windows NT installed

Fax

- G3, send and receive
- EIA Class 1/Class 2 Fax command set

Modem

- V.90, K56flex, V.34+ (33.6 Kbps), V.34 (28.8 Kbps), V.32bis (14.4 Kbps)

Note: *Though this terminal adapter is capable of 56 Kbps download performance, line impairments, public telephone infrastructure, and other external technological factors currently prevent maximum 56 Kbps connections.*

- V.42/V.42bis, MNP Class 2 to 5 error correction and data compression

ISDN Standards

- Basic Rate Access (2B+D)
- U-interface: complies with ANSI T1.601
- S/T-interface: complies with ITU-T I.430
- Protocol: ITU-T Q.921, Q.931, and ETSI NET3

Line Rate

- 64/56 Kbps on 1 B-channel (ISDN data mode)
- 128/112 Kbps on 2 B-channel (PPP/MP)
- 56 Kbps on 1 B-channel (modem mode)
- 16 Kbps on D-channel for signaling

DTE Rate

- Asynchronous, up to 460.8 Kbps (COM port emulation mode)

ISDN Network & Switch Compatibility

- National ISDN-1 (NI-1)
- AT&T 5ESS Custom
- Northern Telecom DMS-100 Custom
- DSS1 (Euro-ISDN)
- INS-Net 64

B-Channel Protocols

- X.75
- V.120
- V.110
- PPP and Multi-Link Protocol
- Async-to-Sync PPP Conversion
- 56K modem over B-channel
- G3 fax over B-channel
- Voice over B-channel

Application Program Interfaces

- ISDN AT Command Set
- CAPI 2.0
- NDIS WAN

Operating System Support

- Windows 95, OSR2, and 98
- Windows NT 4.0

Shipping Kit Contents

- One MultiMobile ISDN + Voice Modem 56K
- One ISDN U-interface, or S/T-interface, ISDN network connection cable
- One analog fax/modem DAA connection cable
- One ISDN phone kit
- One ISDN phone cord with RJ-45 plugs
- One analog telephone cord with RJ-11 plugs
- One Owner's Manual
- Four 3.5" software/driver program diskettes
  (Note: This manual supports 4.0, or later, drivers only.)
- RVS-COM Lite
- MultiMobile Global Wizard

About This Manual

This manual explains how to install, configure, and use your MultiMobile™ Multifunction PC card. Manual chapters and appendixes are as follows:

Chapter 1—Introduction/Description

Chapter 2—Hardware/Driver Installation

Chapter 3—Application Program Interfaces (APIs)

Chapter 4—Service, Warranty, Technical Support

Appendix A—Pin Assignments

Appendix B—AT Commands, S-Registers, and Result Codes

Appendix C—Upgrade Procedures

Appendix D—Regulatory Information

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MultiMobile™

Chapter 2—Hardware/Driver Installation

MultiTech® Systems

Installing PC Card and Drivers/Software

Installing the MultiMobile PC Card consists of

1. Installing the setup drivers/software
2. Attaching the PC Card to your laptop computer
3. Setting up the IDSN line connection

Safety Warnings

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- This product is to be used with *UL* and *cUL* listed computers.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Windows 95/98 Installation—VCOMM & CAPI

Before you start—In Windows 95, you MUST install the drivers before attaching the PC Card to your laptop. If you install the PC Card first, the operating system won't recognize the device.

1. Click **Start**, **Settings**, **Control Panel, and Add/Remove Programs.** Then click **Install**.
2. The **Install Program From Floppy Disk or CD-ROM** dialog box appears. Insert the MT56128ZLX-ST Disk 1 and click **Next**.
3. The **Run Installation Program** dialog box appears. Click **Finish**.
4. The **Setup** dialog box appears and informs you that the Configuration Utility Setup is preparing the InstallShield Wizard (which guides you through the setup).
5. The **Welcome** dialog box appears. Click **Next**.
6. The **Choose Destination Location** dialog box appears. Click **Next** to install to the destination folder listed in the dialog box. (Click **Browse** to install to a different folder.)
7. The **Select Program Folder** dialog box appears. Select a folder or type a new folder name. Then click **Next**.
8. The **Start Copying Files** dialog box appears. Click **Back** to review or change settings. To begin copying files, click **Next**.
9. As the files copy, the **Setup Needs The Next Disk** dialog box appears and, in sequence, requests Disk 2, Disk 3, and Disk 4 (key disk). Insert each requested disk and click **OK**. The driver installs with each disk.
10. The **Configuration Utility** window and the **Com Port Change** dialog box appear. Make appropriate changes in the **Com Port Change** dialog box, if necessary, and then click **OK**.
11. The **Microsoft ISDN Accelerator Pack 1.1** dialog box appears and asks if you want to install the accelerator pack. (This dialog box does not appear in Windows 98 since the Accelerator Pack is already included in Windows 98.) If it is not installed on your computer, click **Yes** and follow dialog box instructions. If it is already installed, click **No** and close the **Configuration Utility** window.

12. The **Setup Complete** dialog box appears. Make sure **Yes, I want to restart my computer now** is selected, remove the Configuration Utility disk, and click **Finish**. The computer reboots.
13. As the computer is rebooting, insert the MultiMobile into the computer's PC Card slot with the 68-pin connector facing the PC card slot and the label facing up.
14. Plug the 15-pin connector into the 15-pin socket of the PC card. On the other end of the 15-pin cable, leave the RJ-45 receptacle exposed until ISDN connection is made. Hardware installation now is complete. The MultiMobile is powered directly from the PC.
15. Connect the MultiMobile to the network by plugging the RJ-45 cable into the cable's RJ-45 receptacle. Plug the other end of the RJ-45 into an available ISDN outlet.

Note: *If S/T-interface ISDN network connection cable is used, the ISDN phone cord should be connected between the ISDN network connection cable and NT1 device.*

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16. The **New Hardware Found** dialog box appears and Windows automatically installs the Virtual-COM port driver, the ISDN low level driver, and the CAPI port driver. CAPI and VCOMM now are installed successfully. If you want the NDIS functionality, go to the next section to manually install the NDIS port driver.
17. Then the **Line Status** and the **Dialer** dialog boxes appear and minimize to the taskbar.

Windows 95/98 Installation—NDIS

1. Click **Settings**, **Control Panel**, and then double-click the **Add New Hardware** icon. The **Add New Hardware Wizard** dialog box appears. Click **Next**.
2. When the next **Add New Hardware Wizard** dialog box appears, make sure **No** is selected; then click **Next**.
3. In the next **Add New Hardware Wizard** dialog box that appears, scroll down and select **Network adapters**. Then click **Next**.
4. The **Select Device** dialog box appears. Scroll down the list in the **Manufacturer's** text box and select **Multi-Tech**. **MultiMobile MT56128ZLX** then appears in the **Models** text box. Click **OK**.
5. When the **Add New Hardware** dialog box appears again, click **Finish**.
6. The **ISDN Configuration** dialog box appears. Click **Next**.
7. The **ISDN Configuration** dialog box appears. Set the switch type and click **Next**.
8. The **ISDN Configuration** dialog box appears. Type the directory numbers and SPIDs numbers, if necessary, and click **Next**. Then click **Finish**. The NDIS interface now is installed successfully.

   Note: *The switch type and phone number must be the same as Multi-Tech's configuration utility setting. If they are different, the ISDN configuration setting overwrites Multi-Tech's configuration setting.*

   Note: *If you enter Multi-Tech's Configuration utility to change the switch type and phone number, the new settings overwrite the ISDN configuration utility.*

9. To complete setup, reboot your computer.

Windows NT Installation

Since Windows NT 4.x does not feature Plug and Play, users must install the PC Card manually.

Note: *Windows NT4.x only works with CAPI. The ISDN AT command emulation also available through CAPI. Other API modes, such as NDIS and VCOMM, will be supported by a later release.*

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1. Run Windows NT.
2. Plug the PC Card into your laptop's PCMCIA slot.
3. Insert the Windows NT driver disk and click **Start**, **Settings**, **Control Panel**, and then double-click **PC Card (PCMCIA).** Note the resources that NT allocates for I/O range, IRQ, Memory, etc. You will need this information when you check the Adapter Settings in step 7 below. Then click **Network**.
4. The Network dialog box appears. Open the **Adapters** tab and click **Add**.
5. In the next dialog box, click **Have Disk**. Enter the driver path and click **OK**.
6. The **Select OEM Option** dialog box appears with the device name (e.g. **56K Modem + ISDN Adapter for CAPI**) in the text box. Click **OK**.
7. The **Setup** dialog box appears. Make sure the settings for the **Adapter Setting** and the **Line Setting** below match the settings you noted in step 3 above .

   Adapter Setting

   I/O Base: Not used by any other devices

   Interrupt: IRQ does not conflict with any other device

   Mem: Setting is for PCMCIA attribute memory use. (Select one of the settings.)

   Pcmcia: Select **CARDBUS** if the PC Card is seated in the CardBus slot. Select **365 COMP** for the normal PCMCIA slot.

Line Setting

Switch type: Select the ISDN switch type or D-channel protocol

Modem I/O: Specify the I/O for analog applications

Modem choice: Select the analog applications

Analog encoder: Select the encoding scheme for your analog applications, modem over ISDN, modem over PSTN, or ISDN Phone (voice). This setting should be consistent with the ISDN Voice Encoding in ISDN folder in RVS COMMCenter (refer to RVS-COM Lite for details)

Phone number: Enter the ISDN phone number(s)

SPID number: For North American use only

8. When finished, click **Close**.
9. Reboot your computer.
10. To make sure the PC Card driver is installed correctly:
    a. Click **Start**, **Programs**, **Administrative Tools (Common)**, and then **Windows NT Diagnostics**.
    b. Open the **Services** tab and click the **Devices** button. Scroll down the **Device** list to locate the PC Card. If the status is **Running**, the PC Card is installed correctly. If the status displays **Stopped**, double check the settings in step 7 above.
11. Install the CAPI-based application program, RVS-COM Lite.
12. Your MultiModem PC Card is now installed. To trace ISDN connection status when making ISDN connections, open **status.exe** at a the **system32** subdirectory (e.g., c:\winnt\system32\status.exe).

    To change the I/O, IRQ, Mem, Pcmcia, Switch Type, ISDN phone number (required in RVS-COM), click **My Computer**, **Control Panel**, **Network**, and then open the **Adapters** tab. Scroll down the Device list to select the device name. Click **Properties** change parameters. After any setting changes, reboot the NT system.

Customizing the Terminal Adapter (Optional)

Before setting up the ISDN line and configuring the terminal adapter, you can customize your settings. First determine how you want to set up your terminal adapter (TA), then click **Start**, **Programs**, and **Configuration Utility** to locate the configuration utility program. Select one of the following tabs to make changes: **Switch Type**, **General**, **COM Port Setting**, or **Tools**. If you want to use factory default settings, you can ignore this section.

MultiMobile™

Chapter 3—Application Program Interfaces (APIs)

MultiTech® Systems

Introduction

The MultiMobile supports three application program interfaces (APIs)—**VCOMM**, **CAPI**, and **NDIS**—to connect to popular ISDN communication software packages. An API is the interface between application programs and hardware (PC Card) that permits the application programs to talk to and drive the ISDN PC Card. Select the appropriate API for your software package and application.

VCOMM—uses virtual COM ports. The MultiMobile works exactly like an ISDN external terminal adapter, operating with typical terminal emulation packages such as Windows 95 Hyper Terminal, MultiExpress for Windows, Telix, pcAnywhere, etc. In VCOMM mode, ISDN AT commands are usually used to configure the PC Card.

CAPI—designed for CAPI compliant applications (which are widely used in Europe) such as Dial-Up-Networking. The RVS-COM application suite uses CAPI.

NDIS—allows you to use Dial-Up Networking to create remote note connections or Internet connections. In NDIS, you have to specify SPIDs and switch types.

This chapter provides information on how to use APIs to configure your MultiMobile and describes the features of each API.

Note: *Included with the PC Card is the MultiMobile Global Wizard diskette. Use the Global Wizard to change the country code, which enables you to comply with the local telecom authority, thereby optimizing modem performance. The MultiMobile Global Wizard is for use with VCOMM mode only.*

VCOMM (Virtual Communications Port)

With VCOMM, the MultiMobile works exactly like an ISDN external terminal adapter, operating with typical terminal emulation packages such as Windows 95 Hyper Terminal, MultiExpress for Windows, Telix, pcAnywhere, etc. In VCOMM mode, ISDN AT commands usually are used to configure the PC Card.

Note: Fax/Modem over ISDN *and* ISDN Phone over ISDN *functions are available under VCOMM API.*

Making *Modem over ISDN* Data Calls

The Fax/Modem over ISDN function permits you to talk seamlessly through ISDN line to analog fax/modem devices at remote locations. This function is available only under VCOMM API. Make sure the current API setting is correct.

To make a **Modem over ISDN** data call:

1. In the **Configuration Utility**, open the **COM Port Setting** tab and select **Modem over B-channel**. Then click **OK**.
2. Enter **ATDM** and the phone number (for example: **ATDM5553000**) under terminal mode (such as Hypertrm in Windows 95) to make Modem over ISDN data calls.
3. To answer incoming modem calls through ISDN line, in the **Configuration Utility**, open the **General** tab and select **Answered by Modem**. Then click **OK**.

Making *ISDN Phone over ISDN Voice* Calls

The **ISDN Phone over ISDN** function makes voice communication over ISDN line possible with your bundled ISDN Phone kit. The multifunction PC Card permits you to talk to remote parties easily through its unique **ISDN Phone over ISDN** feature, which is the same as using a normal telephone set for voice communications. The **ISDN Phone over ISDN** function is only available under VCOMM API.

1. Attach the ISDN network connection cable (S/T- or U-interface) to the multifunction PC Card 15-pin connector. Then, connect the ISDN phone cord to the ISDN wall outlet (U-interface network connection cable) or NT1 device (S/T-interface network connection cable).

   Note: Fax/Modem over ISDN *cannot be used concurrently with* ISDN Phone over ISDN *applications. Only one application at a time is possible.*

2. Attach the ISDN Phone kit to the voice interface on the ISDN network connection cable.
3. In the **Configuration Utility**, open the **Switch Type** tab and select the appropriate **Voice Encoding** parameter for your ISDN Phone voice applications. If you don't know which parameter is appropriate for your area, try either one. Now you are ready to make calls.

To make voice calls, use *Voice Dialer* in the Configuration Utility.

1. In the **Configuration Utility**, open the **Tools** tab and click the **Phone Dialer** button. The **Dialer** dialog box appears and minimizes to the taskbar. Double-click the Dialer icon in the taskbar to open it. Enter the remote party phone number with the number keys on the screen or type it directly in the **Number to Dial** box; then click **Dial** to dial the phone number.
3. If the remote party is an auto-attending switch board, type the extension number and click **Dial Ext**.
4. Click **Disc** to terminate the voice session.

To answer incoming voice calls over ISDN line

1. In the **Configuration Utility,** open the **General** tab and select **Answered by Phone**. Then click **OK**. (When **Answered by Modem** is selected, incoming calls are treated as modem data calls, and they are answered automatically by the modem.)
2. Open the **Tools** tab and click the **Phone Dialer** button. The **Dialer** dialog box appears and minimizes to the taskbar. Double-click the Dialer icon in the taskbar to open it. When ringing signals are detected, click **Answer** in the **Dialer** dialog box to answer incoming voice calls.
3. Click **Disc** to terminate the voice session.

In VCOMM, it is possible to use one ISDN B-channel for ISDN data calls and the other B-channel for ISDN Phone voice calls simultaneously. Use the configuration utility to place or answer voice calls and use the appropriate software such as Hypertrm, Telix, and Microsoft Dial-Up Networking with VCOMM API for ISDN data transfers.

Making Analog Fax/Modem over PSTN Data Calls

The MT56128ZLX can make analog Fax/Modem connections over Public Switched Telephone Networks (PSTNs). This feature permits connection to a remote party through normal analog telephone lines if an ISDN line is not available.

1. Switch the ISDN S/T- or U-interface network connection cable to analog fax/modem DAA network connection cable.
2. In the **Configuration Utility**, open the **General** tab and select **Modem Over Analog Telephone Line (PSTN)**. Click **OK**.
3. If you need to change the country code, install and use the MultiMobile Global Wizard.

The PC Card operates as a typical fax/modem device, using AT commands to place and answer analog fax/modem data calls (over PSTN).

B-Channel Protocol Configuration

Most ISDN switches transmit network signaling data through the D-channel, allowing both B-channels to be used exclusively for communications, which is called out-of-band signaling. This allows for throughput of 64 Kbps per channel. However, not all ISDN switches support out-of-band signaling.

For switches that do not support out-of-band signaling, network signaling data is transmitted through the B-channels. This downgrades B-channel bandwidth to 56 Kbps for communications use. Before making ISDN calls, specify the ISDN switches you are connecting to support 56K or 64K B-channel speed and specify the correct line speed.

In VCOMM mode (V.120, or async-to-sync PPP and Multi-Link mode), use the **AT!Q** command or the **Configuration Utility** to specify the ISDN B-channel data rate.

AT!Q=0 Select 64 Kbps for B-channel communications
AT!Q=4 Select 56 Kbps for B-channel communications

V.120 Protocol Configuration

When making V.120 calls, make sure the ISDN switch you connect to supports out-of-band signaling. Otherwise, set 56 Kbps B-channel speed for communications. For example: Enter AT!Z=5 to set to V.120 mode.

Then, use the ATD or ATDT command to dial ATD5551000 or ATDT5551000. Or, select the V.120 protocol in the **Configuration Utility**.

V.110 Protocol Configuration

V.110 is used widely in Japan and some European countries. Once you set the proper V.110 communication mode, there is no need to configure the V.110 data rate for the incoming calls. The PC Card auto-detects the V.110 incoming call data rates and establishes links.

Use the configuration utility or ISDN AT command to enable V.110 protocol and specify V.110 user rates (line rate). Unlike an external ISDN TA, you don't need to be concerned about the speed matching between DTE speed and V.110 user rate. The PC Card automatically sets the speed.

Use the following commands to enable V.110 and specify user rates:

AT!Z=6 Select V.110 protocol

ATB? Display current V.110 user rate for outgoing calls

ATB0 Set V.110 user rate = 600 bps

ATB1 Set V.110 user rate = 1200 bps

ATB2 Set V.110 user rate = 2400 bps

ATB3 Set V.110 user rate = 4800 bps

ATB4 Set V.110 user rate = 9600 bps

ATB5 Set V.110 user rate = 19200 bps

ATB6 Set V.110 user rate = 38400 bps

ATB7 Set V.110 user rate = 48000 bps

ATB8 Set V.110 user rate = 57600 bps (Japanese ISDN only)

Async to Sync PPP Connection

Increasingly, Internet Service Providers (ISPs) are offering their services through dial-up ISDN lines for higher data bandwidth demands. Equipment used at the service provider's location is usually an ISDN router or Remote Access Server, which—unlike terminal adapters (TAs)—lacks asynchronous capability. For that reason, ISDN TAs that support only V.120 or other async protocols will not work with the router-based servers at the ISP site.

The support of async-to-sync PPP conversion permits the PC Card to connect to your router-based ISPs with the incorporation of TCP/IP software packages. Furthermore, Multi-Link PPP protocol permits a 128 Kbps ISDN connection when applications are bandwidth critical.

Set the Single-Link PPP mode as follows:

AT!Z=9	Set async-to-sync PPP conversion mode
AT&N0=0	Set Single-Link mode

Set the Multi-Link PPP (MLPPP) mode as follows:

AT!Z=	Set async-to-sync PPP conversion mode
AT&N0=1	Set Multi-Link mode

To enable async-to-sync PPP conversion protocol with the **Configuration Utility**:

1. In the **Configuration Utilty**, click the **COM Port Setting** tab.
2. Then select **PPP**.

Multi-Link PPP Connection

Your MT56128ZLX supports combining two 64 Kbps data channels (B-channels) into the equivalent of a single 128 Kbps line. To use Multi-Link (the answering Internet service provider), the on-line service or corporate LAN must provide Multi-Link capabilities.

To enable MLPPP:

1. First, enter **AT!Z=9** and **AT&NO=1**. (Or, select **MP Enabled** in the **General** tab in the **Configuration Utility**.)
2. Then enter the ISDN phone numbers in the following format:
   <first_ISDN_phone_number> + <secondary_ISDN_phone_number>
   OR
   <first_ISDN_phone_number> & <secondary_ISDN_phone_number>
   OR
   <first_ISDN_phone_number> ! <secondary_ISDN_phone_number>
3. Multi-Link calls then are made automatically for you.

Making ISDN Data Calls

The dialing method usually is subject to the application programs you use. For example, Telix uses the AT command for making calls; Microsoft Exchange and Internet Explorer use Windows 95 Dial-Up Networking (DUN) for dialing.

Users can use ISDN AT command ATD<ISDN_phone_number>, such as ATD5551000 or ATDT5551000, or DUN to make ISDN calls in VCOMM mode. See making Multi-Link PPP connections through VCOMM API.

Using ISDN AT Commands to Establish Multi-Link PPP Connections

There are three ways to make Multi-Link PPP calls with ISDN AT commands. The following methods must be done in async-to-sync PPP conversion mode (AT!Z=9).

Method 1:

AT!Z=9 Sets async-to-sync PPP conversion mode

AT&N0=1 Sets Multi-Link mode

AT&Z0=<ISDN_phone_number> Sets secondary dialed ISDN phone #

For example: **AT!Z=9&N0=1&Z0=5553000**

ATD5551000

When you make an ISDN call (5551000), the PC Card makes the second call for you automatically through the pre-stored secondary ISDN phone number in AT&Z0 (5553000) and bundles the two calls for data transfer.

Method 2:

AT!Z=9 Sets async-to-sync PPP conversion mode

AT&N0=1 Sets Multi-Link mode

AT&J1 Uses single ISDN phone number for Multi-Link PPP connections

For example: **AT!Z=9&N0=1&J1**

ATD5551000

If AT&J1 is set and users dial one number with the dial string (5551000), the PC Card automatically dials that number twice and bundles the two calls for data transfer. If there is a pre-stored ISDN phone number in AT&Z0, it is overwritten automatically by the ISDN phone number (5551000).

When AT&J0 is set (the second number must be specified in AT&Z0=<second_ISDN_phone_number>), the PC Card dials two different ISDN phone numbers to make Multi-Link PPP calls (see Method 1). If you don't specify the second ISDN phone number in AT&Z0, problems can occur.

Method 3:

AT!Z=9 Sets async-to-sync PPP conversion mode

AT&N0=1 Sets Multi-Link mode

ATD<first_ISDN_phone_number>+<secondary_ISDN_phone_number>

OR

ATD<first_ISDN_phone_number>&<secondary_ISDN_phone_number>

OR

ATD<first_ISDN_phone_number>!<secondary_ISDN_phone_number>

For example: **AT!Z=9&N0=1**

ATD5551000 + 5553000

OR

ATD5551000&5553000

OR

ATD5551000 ! 5553000

The MT56128ZLX makes two ISDN calls automatically through two separate ISDN phone numbers (5551000 and 5553000) and bundles the two calls for data transfer. The +, **&**, and **!** modifiers are accepted in the dial string to indicate the start of a secondary phone number to dial for MLPPP connections.

If there is a pre-stored ISDN phone number in AT&Z0, it is overwritten by the second specified ISDN phone number (5553000).

When AT&J1 is enabled, and if two separate numbers using +, **&**, and **!** dial modifiers are dialed, the explicitly specified second phone number supersedes the AT&J1 setting. The second number given in the dial command (5553000) is used, rather than dialing the first number (5551000) twice. The only time the AT&J1 has an effect is when only one number is dialed.

Enabling Multi-Link PPP Options with the Configuration Utility

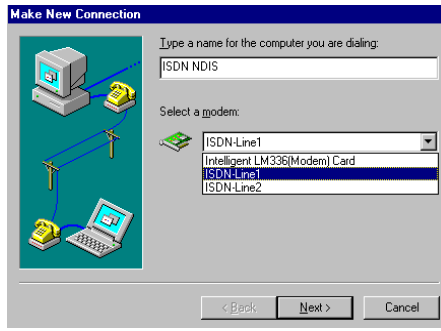
1. In the **Configuration Utility**, open the **COM Port Settings** tab and select **PPP**.
2. Open the **General** folder and select **MP Enabled**.
3. Specify the Call Bundling options. If **Use Same Phone Number (AT&J1)** is selected, the MT56128ZLX dials the ISDN phone number in the dialing string or dialing utility (such as Dial-Up Networking) twice to make Multi-Link PPP connections. Once **Use Different Phone Number (AT&J0)** is clicked, enter the second ISDN phone number for Multi-Link PPP connections.
3. Click **OK** to finish the settings.

NDIS (Network Driver Interface Specification)

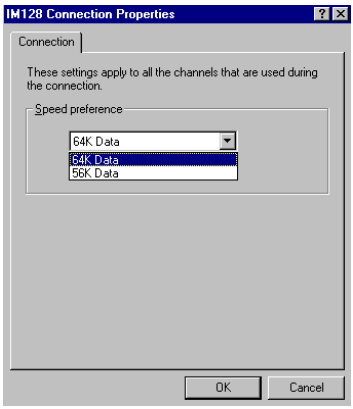
NDIS is designed exclusively for running with Microsoft ISDN Accelerator Pack for Internet connections.

How to Use Dial-Up Networking (DUN) with NDIS for Internet Connections

1. Make sure the Microsoft ISDN Accelerator Pack, and the Intelligent ISDN TA PC Card (NDIS mode) are properly installed.
2. Establish a new ISDN connection in the **Dial-Up Networking** folder. Double-click **My Computer** on Windows 95 desktop. Then double-click the **Dial-Up Networking (DUN)** folder.
3. Double-click the icon labeled **Make New Connection** to define a connection to the dial-up service you want to use.
4. Select one **ISDN-Line#** (the other ISDN-Line# will be used for making Multi-Link PPP connections). **DO NOT** select **MultiMobile MT56128ZLX (Modem)**.



5. Click the **Connection** tab to select the ISDN B-channel speed (56K or 64K). Then click **OK**.

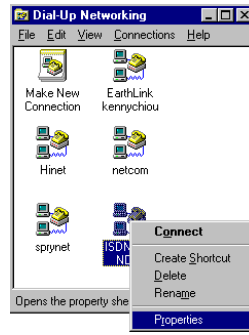


6. Click **Next**. Enter the ISDN phone number you want to connect to and click **Next** again. Then finish the new ISDN connection establishment.
7. Right-click the NDIS connection icon and click **Properties**.
8. Open the **Server Types** folder and complete all TCP/IP settings according to the information provided by your Internet Service Provider (ISP) and click **OK**.

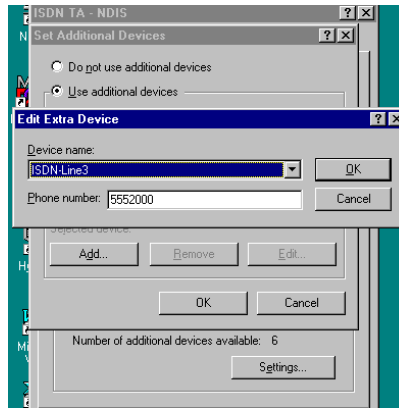
   You can use Microsoft Internet Explorer, or Netscape Navigator, or some other third party Internet application program for connecting to the ISPs through Windows 95 Dial-Up Networking.

How to Use Dial-Up Networking with NDIS for Multi-Link PPP Connections

1. Complete the steps in the previous section.
2. Right-click the NDIS connection icon and click **Properties.**



3. Click **Settings** in the **General** folder. Click **Use additional devices** and then click **Add** to specify the additional device name and the secondary phone number for making Multi-Link PPP connections.
4. Click **OK** to finish the Multi-Link PPP settings.



5. Open the **Server Types** folder and complete all TCP/IP settings according to the information provided by your Internet Service Provider (ISP) and click **OK**.
6. Double-click the ISDN NDIS connection icon in the **Dial-Up Networking** folder for Multi-Link PPP connections.

Dial-Up Networking (DUN)

Dial-Up Networking version 1.2, included in the Fax/Datacomm software CD, provides additional features for the dial-up networking support in Windows 95 and is part of the process that gives remote users secure access to a corporate LAN.

Note: *This section contains instructions for locating and installing Microsoft's Dial Up Networking 1.2 for Windows 95. Since DUN upgrades are provided by Microsoft, location and specifications of their software are subject to change. For specific installation and setup information, refer to Microsoft documentation for procedures specific to your particular environment.*

Installation

1. In addition to this Dial-Up Networking 1.2 upgrade, you must install the protocol required by the private network on each Windows 95 client. (If the private network is running IP, no action is required. If the private network runs IPX or NetBEUI, then each Windows 95 client must also support this protocol).
2. In the Fax/Datacomm CD, click the DUN folder to open the software and follow instructions in the screen prompts.

Setup Connections

1. With the right mouse button, click **Network Neighborhood** to open the **Network** dialog box. Select **Properties**.

   Several new components display, such as **Microsoft Virtual Private Networking Adapter**, **Dial-Up Adapter #2**, and **NDISWAN** (you can remove NDISWAN if you are not using an ISDN TA). Each protocol you install is listed a second time, but with the VPN support suffix.
2. To set up a DUN 1.2 connection to your ISP, double-click **My Computer**, open the **Dial-Up Networking** folder, and double-click **Make New Connection**. When prompted, enter connection name, modem model used, and ISP area code and phone number.
3. Click **Finish**; the icon for the connection displays.

4. Click the new connection icon and select **Properties**. At the **Server Types** tab, **PPP: Windows 95, Windows NT 3.5, Internet** should display in the **Type of Dial-up Server** list box.
5. If connecting to an ISP with multiple channels, remove the check in **Advanced Options** check box labeled **Log on to network**.
   If logging on to a PPTP server on a private network, leave the check box checked.
6. Make sure the **Allowed Network Protocols TCP/IP** check box is checked and clear any protocol check boxes you won't use.
7. Click **TCP/IP Settings**. If applicable, enter the IP address or DNS server address provided by your ISP. (Most ISPs provide server-assigned addresses.)
8. Click **OK**. The DUN 1.2 connection is complete.
9. To set up and configure the PPTP connection, click **Make New Connection** in the **Dial-Up Networking** window.
10. Enter a name for the PPTP connection; then select **Microsoft VPN Adapter** from the drop-down list box and click **Next**.
11. Under **VPN Server**, enter the IP address or host name of the PPTP server to which you want to connect. Click **Next**; then click **Finish**.
12. With the right mouse button, click the second icon representing your PPTP connection; then select **Properties**.
13. Click the **Server Types** tab and configure the network protocols and advanced options, as you did for the DUN connection in step 2 on the previous page.
14. Reboot your system to set up the VPN drivers.

This completes installation and setup of Dial-Up Networking 1.2. For additional information, refer to Microsoft documentation.

To initiate the VPN connection, double-click your ISP connection icon and enter user name and password. Click **Connect**. When connection is established, double-click the PPTP connection icon, enter your user name and private network password, and click **Connect**. You will have two active connections: one to your ISP and one to the PPTP server.

CAPI (Common ISDN Application Programming Interface)

The CAPI 2.0 (or later) interface allows applications to access the MT56128ZLX PC Card for up to 128K data transmission. The RVS-COM application suite, which provides Internet-related applications, videotex, terminal emulation, file transfer, remote control, answerphone, softfax, and softmodem features, uses CAPI.

This section explains how to make the PC Card (with DSS1 D-channel protocol) work with RVS-COM Lite for Windows 95/NT, which supports CAPI 2.0, X.75, and other popular applications in most western European countries.

After RVS-COM Lite is installed, you can find RVS-COM application details in **On-line Documentation**.

Note: *If ACOTEC ISDN for Windows 95 is installed in your system, remove it completely to avoid any problems with this installation.*

The MultiMobile PC Card supports CAPI drivers. With optional CAPI-based software like RVS-COM Lite, it not only supports ISDN data, but the following functions also become possible:

- Fax service—Allows you to send and receive G3 fax messages via Microsoft Exchange, Messaging System, and Outlook.
- Answering machine—The ISDN TA PC card works as a digital answering machine with the CAPI-based application program.
- EuroFile Transfer—Allows you to send and receive files when the EuroFile Transfer function is running.
- ISDN modem—The virtual modem function allows all modem-based applications to use the ISDN TA PC Card to connect via ISDN line. The ISDN modem is a software modem that, like a FOSSIL driver, *understands* and converts AT commands into CAPI 2.0 function calls. The ISDN modem can be used with some modem applications in Windows 95, e.g., Dial-Up Networking and HyperTerminal. It was designed for Windows 95-compliant modem applications (TAPI, VCOMM, Unimodem).

NOTE: *The ISDN modem is not an emulation of an analog modem (i.e., it does not transmit tones). Consequently, you cannot use it to set up a connection to nonISDN mailboxes, nor can you test it with tools designed for analog modems.*

- Telephony—Turns your laptop into a complete ISDN telephone (full duplex sound card is required in your laptop).

Preparation

To run RVS-COM on your computer, you must have Windows 95 or OSR2 installed with Microsoft Exchange and CAPI driver.

Microsoft Exchange

Refer to the Windows 95 user's manual for additional details about MS Exchange installation and configuration.

1. Click **Control Panel**, **Add/Remove Program**, and then **Windows Setup**.
2. Click the **Microsoft Exchange** (or **Windows Messaging** in OSR2) check box. Click **OK**.
3. Select **Manual method to set the service**.
4. Add the service **Personal Notes** (**Address Book** in OSR2) and **Personal Directory** (**Folders** in OSR2).
5. When adding the **Personal Directory**, provide a path for a **pst** file. For example, if **temp** subdirectory exists, name the path **c:\temp\new.pst**.

RVS-COM Lite Installation

To install RVS-COM Lite on your PC:

1. Click **Start**, **Settings**, and then **Control Panel**. Double-click **Add/ Remove Programs**. Click **Install**.
2. Insert the RVS-COM CD-ROM into your CD drive. Then click **Next**.
3. **D:\SETUP.EXE** appears in the command line. Click **Finish**.
4. Enter the serial number (KEY), which is located on a sticker on the back of the CD-ROM. Click **SETUP** and follow on-screen instructions until setup is completed; then click **Finish**.

5. The **RVS-COM installation Wizard** appears automatically. Click **Next**.
6. From the list, choose the appropriate installation components for your applications. For example:

   ISDN CAPI Adapter
   ISDN Line/Phone Numbers
   RVS ISDN Modems
   RVS E-Mail Services
   File Transfer Host

7. Click **Next** twice.

ISDN CAPI Adapter Configuration

1. The **RVS-COM Installation: ISDN Adapter** dialog box appears. Click **Next**. The **ISDN Protocols and Services** dialog box appears. Click **Next**.
2. The **ISDN Softfax** dialog box appears. Select the following:
   Use Softfax to send fax
   Use Softfax to receive fax
   Softfax should also receive at 14400 bps
   Click **Next**.
3. The **ISDN Softmodem** dialog box appears. Select **Use Softmodem**, then click **Next**. Then click **Finish**.

ISDN Line/Phone Numbers Configuration

1. The **ISDN Line/Phone Numbers** dialog box appears. Click **Next**.
2. The **ISDN Line and Location** dialog box appears. Enter correct ISDN line type. For example, **Europe, Euro-ISDN (DSS1)**.
3. Click **Dialing Properties** to change Location, Country Code, Area Code, or Access Code. Click **OK** when finished to return to **ISDN Line and Location** dialog box. Then click **Next**.
4. The **Charges** dialog box appears. Enter the unit charge information for your ISDN calls. Then click **Next**.
5. The **ISDN Phone Numbers** dialog box appears. Enter your MSN number for each service. Then click **Next**.

Note: *In Europe, if you subscribe to MSN service, specify a unique MSN number for each application such as Eurofile Transfer, Voice Mail, and G3 Fax. If not, you must enter the MSN number* ***0*** *for your application. You can enable one service ONLY with the MSN number 0 (for example, either G3 Fax, or Voice Mail, or Eurofile Transfer).*

6. The **Phone Number for External Calls** dialog box appears. Enter your ISDN phone number. Then click **Next**.

Note: *Some switches need this phone number as the* ***calling party number*** *during ISDN connection setup*

7. The **File Transfer Host** dialog box appears. Enter phone numbers for your applications. Or, enter the numbers later. Click **Finish**.
8. The **RVS CAPI Modems** dialog box appears. Click **Next**. In the next dialog box, specify the COM port for your CAPI modem. For example, **COM6**. Then click **Finish**.

E-Mail Transport Services Configuration

1. The **E-Mail Transport Services** dialog box appears. Click **Next**. In the next dialog box, select **RVS Fax** and **RVS Voice Mail** to enable voice and fax functions. Then click **Next**.

If you don't activate fax and voice functions, skip steps 3–7 below.

2. The **Fax** dialog box appears. Enter your sender identification information. Click **Next**.
3. Select **ISDN Fax G3** as your fax device. Click **Next**.
4. Enter phone number information for the fax service. Click **Next**.
5. Enter phone number for fax reception; then click **Next**.
6. The **Voice Mail** dialog box appears. Enter answerphone number. Click **Answerphone** to edit your messages; click **Finish**.

File Transfer Host Configuration (Host Mode in RVS CommCenter)

1. The **File Transfer Host** dialog box appears. Click **Next**.
2. In the next dialog box , enter the **ID** and **password** for your file transfer host, which allow remote callers to log into specified folders and access data.
3. Specify the file folder path that requires ID and password for caller access.
4. Specify the file folder path that allows caller access without ID and password. Click **Finish**.

The Installation Wizard is finished now. Click **OK** to start the CommCenter and activate the installed services. Reboot your laptop. RVS-COM is completely installed now. To change RVS-COM settings, open **RVS CommCenter**.

Applications

Using PPP Protocol to Connect to ISPs

Click **My computer, Control Panel**, and then **Modems.** If **RVS ISDN Internet PPP** appears in the list under the **General** tab, RVS-COM installed successfully. Otherwise, check the RVS-COM installation. Or, call the RVS-COM support center for help.

Click **Control Panel**, **Add/Remove Programs**, **Windows Setup** tab, **Communications**, and then **Details** to ensure **Dial-Up Networking** appears in the **Components** list. If it is not installed (box next to the folder is not checked), follow these instructions:

1. In the **Dial-Up Networking** folder, click **Make New Connection**. Enter a name for the new connection icon. For example: **RVS_1**. Select **RVS ISDN Internet PPP**.
2. With the right mouse button, click the new connection icon.
3. In the **General** menu, enter the phone number you want to dial. Select **RVS ISDN Internet PPP** from the **Connect Using** box.
4. In the **Server Type** menu, select **PPP: Win95, Windows NT 3.5, Internet** from the **Type of Dial-Up Server** box.

5. Under **Advanced Options** click **TCP/IP** (at least) in **Network Protocols** for your Internet application
6. Click **TCP/IP Settings** and specify other TCP/IP parameters, such as IP address and DNS address, if necessary.

Now you are ready to connect to your ISP via PPP protocol.

Using Multi-Link PPP to Connect to ISPs

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**. If only one COM port, (for example, **ISDN**) is listed in **CommCenter controls the following ports:** text box, add another ISDN port.
2. To add another ISDN port, click **Add**. The **Add New Port** dialog box appears. Select **An ISDN channel on your local PC**; then click **Next**.
3. Enter a new port name (for example, **ISDN2)**. Click **Next**.
   Select **Let other programs use this as a COM port**. Click **Next**. Select a name for this port where it can be accessed in Windows. Click **Next**; then click **Finish**.
4. Click **My computer**, **Control Panel**, and then **Modem**. Click **Add**, **Other**; then click **Next**.
5. Select **Don't check my modem; I will select it from a list.** Click **Next**.
6 Select **RVS Datentechnik** from the Manufacturers list and **RVS ISDN Internet PPP** from the **Models** list. Click **Next**.
7. Select the RVS COM port just added.
   RVS ISDN Internet PPP #2 should appear in the modem list.
8. In **My Computer** dialog box, select the **Dial-Up Networking** folder. Click **Make new Connection** and enter a new connection name. For example, **RVS_2**.
   Select the modem **RVS ISDN Internet PPP**. Click **Next**.
9. Enter the phone number for the computer you want to dial. Click **Next**. Click **Finish** to return to the **Dial-Up Networking** dialog box.
10. With the right mouse button, click the icon **RVS_2**. Click **Properties.**

11. To make connections with Multi-Link PPP, click **Settings**. Select **Use additional devices**. Then click **Add**. Use the arrow to scroll down the **Device name** list and select **RVS ISDN Internet PPP #2**. Click **OK** twice.
12. Select the **Server Types** tab. Use arrow to scroll down **Type of Dial-Up Server** list and select **PPP: Win95, Windows NT 3.5, Internet**.
13. Click the appropriate **Advanced options**.
14. Under **Allowed network protocols**, select at least **TCP/IP** protocol for your Internet application.
15. Click **TCP/IP Settings** and specify other TCP/IP parameters such as IP address and DNS address, if necessary. Click **OK** when finished.

Now you are ready to communicate with your ISP via Multi-Link PPP protocol.

Making X.75 Connections

Act as a Called Party (for incoming calls)

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**. Make sure the following settings are correct:
   Your ISDN phone number
   COM port assignment
   MSN/EAZ numbers
   If you change any settings, remember to reboot your system.
2. Click **My Computer**, **Control Panel**, and then **Modem**. Select **RVS ISDN X.75 transparent**. Click **Properties**. Make sure the COM port is assigned correctly and no conflict exists. For example, **RVS Port (COM6**). Click **OK**; then close the window.
3. Run Windows 95 **Hypertrm**. Set **ATS0=1 <Enter>** by using the AT command to make the ISDN TA PC Card to automatically answer the incoming X.75 calls. Then wait for the incoming calls.

Act as a Calling Party (make outgoing calls)

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**. Make sure the following settings are correct:
   Your ISDN phone number
   The COM port assignment
   MSN/EAZ numbers
   If you change any settings, remember to reboot your system.
2. Click **My Computer**, **Control Panel**, and then **Modem**. Select **RVS ISDN X.75 transparent**. Click **Properties**. Make sure the COM port is assigned correctly and no conflict exists. For example, **RVS Port (COM6)**. Click **OK**; then close the window.
3. Open Windows 95 **Hypertrm**. Enter a name for the new connections. For example, **RVS_X75**. Click **OK**. Enter the ISDN phone number that you want to connect to. Select **RVS ISDN X.75 transparent** in the **Connect using** box. Click **OK**. Click **Dial** to dial.

After you establish the ISDN link, you can use data transmission protocols such as Z-modem or X-modem for data transfer.

EuroFile Transfer Applications

Act as a Called Party (Host Mode)

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**.
2. Click the **Port** tab. Make sure the **ISDN** port check box is checked. Click **Properties**. In the **Port** tab, make sure your ISDN phone/MSN number for outgoing calls is correct.
3. Click the **Windows Port** tab. Make sure COM port is assigned and enabled.
4. Click the **Autoanswer** tab. Make sure **Answer calls automatically** and **Eurofile Transfer** check boxes are checked. Also, enter the phone/MSN number for **Eurofile Transfer**.
5. Click **Properties**; then click the **Answer call** tab. Enter the number of rings before answering. Click **OK**.
6. Make sure all other settings in **RVS CommCenter** are correct. Click **OK**.

7. Click the **Host Mode** tab. Enter the **User ID** and **Password** for remote parties to use to log into the host. Specify the file folder path that allows:
   - remote access with ID and password
   - anonymous access without ID and password

   Click **OK**.

8. Restart Windows 95. Open **CommCenter** again and make sure the **ISDN** port is in the **ISDN: waiting for calls** mode. Wait for incoming calls. Click **OK**.

Act as a Calling Party

1. Click **Start**, **Programs**, **RVS-COM Lite**, and **Transfer Master**.
2. Double-click **General (ISDN-Eurofile)** in the **Presets** list. Enter **User name** and **Password** from Eurofile Transfer host (for logging into host). If you have not authorized **User ID** and **Password**, you can download only (no upload).
3. Click **Change**. Enter the host phone number you want to connect to. Click **OK**.
4. Click the **Device** tab and select **ISDN Eurofile Transfer** for the connection.
5. Click **Properties**. Enter the optimized block size for the file transfer (try 2048), your ISDN phone number, and MSN for outgoing calls. Click **Apply**; then **OK** twice to return to the **Connect To** dialog box.
6. Click **Connect** to establish connection.

G3 Faxing Applications

To use RVS-COM to send/receive G3 faxes, the following components need to be installed:

- Microsoft Exchange (see MS Exchange installation)
- **RVS FAX** and **RVS Voice mail** (see RVS-COM Lite installation)

Receiving

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**.
2. In the **Ports** tab, make sure the **ISDN** port check box is activated. Click **Properties**.
3. Open the **Autoanswer** tab. Make sure **Answer calls automatically** and **Fax** check boxes are checked. Enter the phone/MSN number for fax services.
4. Click **Properties** and click the **Answer call** tab. Enter the number of rings for answering.
5. Open the **Fax ID** tab and enter your local fax ID. Click **OK**.
6. Open the **Windows Port** tab. Make sure the COM port is assigned and enabled. For example, **COM6**.
7. Open the **Port** tab. Make sure your ISDN phone/MSN number for outgoing calls is correct.
8. Make sure all the other settings in **RVS CommCenter** are correct. Click **Apply**; then **OK**. If any setting changed, reboot Windows 95. Wait for incoming fax calls.

Sending

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **Create new fax.** The Microsoft Mail dialog box opens. Click **OK**.
2. Enter the name and fax number of the remote party that wants to connect. Click **Next**.
3. Enter the subject and text of the fax message you want to send. Or, skip by clicking **Next**.
4. Attach your fax cover page or skip by clicking **Next**.

5. To add file(s) with your message, click **Add File** to open your system folder to select the file. Click **OK**. The file appears in the **File to send** list. Click **Next**.
6. If you want to preview the fax document, click **Show fax…,** then click **Finish** to end the fax sending preparation. RVS then sends the fax for you automatically.

Voice Applications

With the RVS-COM Lite ISDN software package and laptop equipped with full-duplex sound card, voice applications are possible. These include:

- Digital answering machine
- ISDN phone (acts like a telephone where you communicate over ISDN line)

To use voice applications fully, especially the ISDN phone service, you need a full-duplex audio device (sound card). Full-duplex means your audio device can handle incoming and outgoing sound signals simultaneously (i.e., you can listen and talk at the same time). If you do not have full-duplex, you hear the caller only. However, this still allows you to run the answering machine function.

Digital Answering Machine

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**.
2. In the **Ports** tab**,** make sure the **ISDN** port check box is checked. Click **Properties**.
3. Open the **Port** tab. Make sure your ISDN phone/MSN number for outgoing calls is correct.
4. Open the **Windows Port** tab. Make sure the COM port is assigned and enabled. For example, **COM6**.
5. Open the **Autoanswer** tab. Make sure the **Answer calls automatically** and **Voice** boxes are checked. Enter the phone/MSN number for voice services.
6. Click **Properties**; then click the **Answer call** tab. Enter the value for the number of rings before answering. Click **OK** twice.

7. Click the **ISDN** tab. Select the appropriate ISDN voice coding for your area. A-law is commonly used in European countries. Mu-law is for US and Canada.
8. Make sure all other settings in **RVS CommCenter** are correct.
9. Click **Apply**; then **OK**. If settings changed, reboot Windows 95.

Greeting/End Message Recording

You can use **Answerphone** to record/edit voice recordings.

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**.
2. Open the **Ports** tab. Click **Properties**.
3. Open the **Autoanswer** tab. Click **Answerphone**.
4. Click **Add** to create a new schedule. Fill in data; then click the **Record calls** box.
5. The **Greeting** message plays when Answerphone answers incoming calls. The **End** message only plays when the option **Record calls** is checked and the caller exceeds the maximum recording time.

   To change the **Greeting** or **End** message, click the appropriate **Edit** button to open the **Recorder** utility. Then start recording.

   You can also use the **Recorder** utility to play and check recorded greeting/end messages. Or, you can import the prerecorded WAV format voice file as your greeting/end message. (click **File** and then **Import** in **Recorder** utility) Click **OK** when finished.
6. To edit an existing schedule, select one and click **Properties**. Make changes in the **Schedule Properties** dialog box.
7. Click **OK** to return to the **Answerphone** dialog box. Click (to enable) the message schedule just added or modified.
8. Click **Start**, **Programs**, **RVS-COM Lite**, and then **Telephone**.
9. Click the **Answerphone** function bar to **ON** (**OFF** is for **ISDN Phone** services). Wait for incoming calls.

Incoming messages are stored in MS Exchange (**Inbox** on Windows 95 desktop screen). Double-click received voice mails to play messages.

ISDN Phone

1. Click **Start**, **Programs**, **RVS-COM Lite**, and then **CommCenter**.
2. Open the **Ports** tab. Make sure the **ISDN** port box is checked. Click **Properties**.
3. Open the **Port** tab. Make sure your ISDN phone/MSN number for outgoing calls is correct.
4. Open the **Windows Port** tab. Make sure the COM port is assigned and enabled. For example, **COM6**.
5. Click **Autoanswer**. Make sure **Answer calls automatically** and **Voice** check boxes are checked. Enter the phone/MSN number for voice services
6. Click **Properties**; then open the **Answer call** tab. Enter the number of rings before answering. Click **OK**.
7. Open the **ISDN** tab. Select the appropriate ISDN voice coding scheme for your area. A-law is commonly used in European countries. Mu-law is for US and Canada.
8. Make sure all the other settings in **RVS CommCenter** are correct.
9. Click **Apply**; then **OK**.
   If any setting changed, reboot Windows 95.
10. Click **Start**, **Programs**, **RVS-COM Lite**, and then **Telephone**.
11. Click **Answerphone** function bar to **OFF** (**ON** is for **Answering machine** services).
12. Plug the microphone and speakerphone to the audio interface(s) on your laptop.
13. Use phone dialer in **RVS Phone** to dial out.

    When calls come in, the **RVS Phone** automatically opens. Click **Accept** to pick up calls. Click **Hang Up** to disconnect line when finished.

MultiMobile™

Chapter 4—Troubleshooting

MultiTech® Systems

Troubleshooting

This chapter covers common problems you may have with your modem and how to solve them. Your MultiMobile was thoroughly tested at the factory before shipping. If you are unable to connect successfully, or if you experience data loss or garbled characters during connecting, it is possible that the modem is defective. However, it is more likely that the source of your problem lies elsewhere. Always make sure all hardware is properly connected. Then review the common problems listed in this chapter for recommendations on what to change. At the end of this chapter are specific steps for resolving IRQ and COM port conflicts.

If you are unsuccessful after trying possible solutions listed here, call Tech Support at 1-800-972-2439.

When running applications, the system reports “Open port fail.”

- Make sure the PC Card is properly plugged into the PC Card slot.
  - —Windows 95 displays “Open port fail” because the MultiMobile is in use by other applications. Terminate the other applications and try again.
  - —If VCOMM API is used, make sure the application’s COM port setting is consistent with the COM port setting in Windows 95’s **System** properties.
  - —If all the above solutions do not help, uninstall the MultiMobile and install again.

No Response to AT Commands

- The COMx port the TA is set to may conflict with another card. Change the COMx port of MultiMobile to a different unused port. It may be best to set it to COM3 or COM4. Even if the serial port is not set to the same COMx port as the MultiMobile, you can still have problems. Be sure to update your software COMx port setting as well.
- The Interrupt that the MultiMobile is using may be the same Interrupt another card is using. Change the IRQ settings to a different, unused IRQ. Even if the serial port is not set to the same IRQ as the MultiMobile, you can still have interference with the TA.
- Type **AT&F** and press **Enter**. Then type **AT** again. The MultiMobile should respond with **OK**. Otherwise, uninstall the MultiMobile and install again.

The TA does not execute the command line

- Make sure you are typing **AT** at the beginning of the command line (and pressing **Enter** at the end of the line).
- Make sure the TA is not in Data Mode. Type +++ if necessary.
- Make sure your software is set to the same COMx port as your MultiMobile.

The TA does not respond after you execute an AT Command

- The echo and/or responses may be turned off by the **ATE0Q1** commands. Enable the **AT&V1** to check Result Codes.
- Type **ATE1Q0** and press **Enter** to turn on the echo and/or responses.
- Before entering the AT command, make sure the MultiMobile is in Command Mode and not Data Mode.

The software does not control the TA properly or cannot detect the TA

- Make sure the software properly configured. Check the initialization string and dial string.
- Some TSRs (programs that stay in memory after they are loaded) may conflict with the communications software.
- Try starting your computer without loading any TSRs.

The characters on the screen are doubled

- Both the TA and the software have the echo feature turned on. Since only one needs an echo, turn off the software echo feature.
- The remote TA is echoing your typed characters. Type **ATE1** and press **Enter**. Then turn off the software echo feature.

No text appears on the screen when in Command mode

- If you can't see the characters you enter, type **ATE1**. Then press **Enter**.

Communications software dials, but fails to connect

- Make sure the software dialing prefix is **ATDT**.
- Make sure the software and TA are set to the same COMx port.
- The TA may not have hung up the phone line since the last call.
- Change to Command mode and type **ATH**. Then press **Enter**.

In NDIS mode (Microsoft ISDN Accelerator Pack already installed), when your laptop is turned on, Microsoft ISDN Accelerator Pack reports "Network adapter fail."

- Is your ISDN phone line attached properly to the ISDN network connection cable and can you originate/answer ISDN calls?
- When the U-interface network connection cable is used:

  ACT LED indicator ON: ISDN layer 1 active.
  ACT LED indicator OFF: ISDN layer 1 failure. Check ISDN line link.
  LNK LED indicator ON: SPID setting okay.
  LNK LED indicator OFF: SPID setting failure. Check SPID settings.

- When S/T-interface network connection cable is used:

  ACT LED indicator ON: PC Card powered on
  ACT LED indicator OFF: PC Card powered on failure
  LNK LED indicator ON: SPID setting okay (for US version) or ISDN layer 1 active (for non-US version)
  LNK LED indicator OFF: SPID setting failure (US version), or ISDN layer 1 failure (non-US version)

- In VCOMM mode, use the **ATH5** command to check if the ISDN link between MultiMobile and ISDN switch is ready to make/answer calls. The following responses report the MultiMobile's status:

  Line Lost: ISDN phone line not connected

  — Check connection between MultiMobile and ISDN network connection cable
  — Check connection between ISDN network connection cable and ISDN switch
  — Check ISDN switch type setting

  SPID Fail: Both SPID numbers are not correctly configured.

  1 SPID Ready: One of the SPID numbers is incorrect.

  2 SPID Ready: The MultiMobile is ready to operate.

MultiMobile throughput is not as fast as expected.

- Sometimes the resident anti-virus program and the laptop's BIOS settings, such as "Auto-detect PNP Function," affect the MultiMobile's I/O operation and may lower the ISDN TA's file transfer throughput. Disable them (keep the system as simple as possible) and try again.

I can run the application successfully, and the MultiMobile responds OK when entering AT commands, but I cannot originate/answer ISDN calls.

- Make sure the ISDN phone line is connected properly.
- Make sure the ISDN switch type is selected correctly.
- Make sure SPID numbers are correct.
- Enter **ATH5** command (in VCOMM mode) to check MultiMobile function.

How can I make sure MultiMobile hardware functions properly?

- Use the **AT&K** command (in VCOMM mode) to verify MultiMobile hardware function. The response to the **AT&K** command is ***ISDN Hardware is OK*** or ***ISDN Hardware is "BAD."***
- Connect the ISDN phone line between ISDN switch and MultiMobile, and use the **ATH5** command (in VCOMM mode) to verify the ISDN PC Card function. All the following messages show the MultiMobile hardware is without problems:

  SPID Fail
  1 SPID Ready
  2 SPID Ready

When the MultiMobile is plugged in, the PCMCIA alert message doesn't sound.

- Click **Control Panel**, **System**, **Device Manager** in Windows 95 to check whether the MultiMobile and the drivers are installed properly. If not, uninstall the MultiMobile and install it again.

When installing NDIS API, the installation erroneously requests *insert the driver disk*.

- The Microsoft ISDN Accelerator Pack or MSDUN v1.2 (Microsoft Dial-Up Networking) must be installed before installing ISDN NDIS API (refer to Chapter 2 for NDIS installation details). Otherwise you may enter an endless loop during installation. Remove the ISDN Modem PC Card from PCMCIA slot, restart Windows 95, uninstall the drivers in the system manually. Install Microsoft ISDN Accelerator Pack or MSDUN v1.2 and then reinstall ISDN NDIS API.

COM Port and IRQ Conflicts

If you have isolated the problem with IRQs or COM ports, refer to the list below to resolve IRQ and COM port conflicts in Windows 95.

When installing a card in an IBM PC compatible computer, it is important to choose settings for the PC Card that do not conflict with other cards in the computer.

Choose an Interrupt (IRQ) and a COMx: port for your terminal adapter card that does not interfere with any other devices in your computer. Select the port and Interrupt you want to use and remember to update your communications software to the same settings.

Below is a list of settings that other cards in your computer may already be using:

IRQ	Cards/Ports that may be using it
0	The computer's timer (not a possible choice)
1	The keyboard (not a possible choice)
2	If you have a PC XT: 8-bit network card, VGA card, handy scanner, bus mouse, MIDI card, or a sound card If you have a PC AT computer controller
3	Computer's COM2, COM4, COM6, COM8, network card, SCSI hard drive controller, handy scanner, bus mouse, or sound card
4	Computer's COM1, COM3, COM5, COM7, network card, handy scanner, bus mouse, or sound card
5	Computer's LPT2, network card, MFM hard drive controller, MIDI card, VGA, SCSI hard driver controller, handy scanner, bus mouse, or sound card
6	Floppy disk driver controller, network card, or sound card (not a possible choice)
7	Computer's LPT1, network card, handy scanner, MIDI card, or sound card
8	Computer's clock (only on a PC AT, not a possible choice)
9	VGA or network card (similar to IRQ2)

10 Network card

11 Network card (not a possible choice)

12 Network card or bus mouse (not a possible choice)

13 Computer's co-processor (not a possible choice)

14 Hard drive controller or network card (not a possible choice)

15 Second hard drive controller or network card (not a possible choice)

Windows 95 COM Port and IRQ Conflicts

1. With the right mouse button, in Windows 95 click **My Computer**.
2. Select **Properties, click** the **Device Manager** tab, and double-click **Ports**.
3. Then double-click the **Communications Port** your TA is connected to.
4. In the port's **Properties** sheet, click the **Resources** tab to view the port's Input/Output range and Interrupt Request. If another device is using the same address range or IRQ, it appears in the **Conflicting Device** list.
5. Disable **Use Automatic Settings** (remove the check from check box) to change the port's settings so they do not conflict with the other device. Or, select the port the conflicting device is on and change it.

   If you need to open your computer to change switches or jumpers on the conflicting device, refer to the device's documentation.

MultiMobile™

Chapter 5—Service, Warranty, Technical Support

MultiTech® Systems

Introduction

This chapter begins with the terms of your PC Card's warranty. If you have questions or problems with your PC Card, carefully read the Tech Support section. It includes technical support telephone numbers, space for recording information about your PC Card, and an explanation of how to send in the PC Card should you require service. The final sections explain how to use our bulletin board service (BBS) and get support through CompuServe, the Internet, and Multi-Tech's Fax-Back System.

Limited Warranty

Multi-Tech Systems, Inc. (MTS) warrants that its products will be free from defects in material or workmanship for a period of five years from the date of purchase, or if proof of purchase is not provided, five years from date of shipment. MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty does not apply to any products which have been damaged by lightning storms, water, or power surges or which have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products which prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

On-line Warranty Registration

To register your Multi-Tech product on-line, enter in the following URL on your Internet browser:

http://www.multitech.com/register

Software User License Agreement

MultiMobile software is licensed by Multi-Tech Systems, Inc. to the original end-user purchaser of the product, hereafter referred to as "licensee." The License includes the distribution diskette, other accompanying programs, and the documentation.

The MultiMobile software, hereafter referred to as "software," consists of the computer program files included on the original distribution diskette.

Licensee agrees that by purchase and/or use of the Software, he hereby accepts and agrees to the terms of this License Agreement.

In consideration of mutual covenants contained herein, and other good and valuable considerations, the receipt and sufficiency of which is acknowledged, Multi-Tech Systems, Inc. does hereby grant to the Licensee a nontransferable and nonexclusive license to use the Software and accompanying documentation, on the following conditions and terms:

The Software is furnished to the Licensee for execution and use on a single computer system only and may be copied (with the inclusion of the Multi-Tech Systems, Inc. copyright notice) only for use on that computer system. The Licensee hereby agrees not to provide or otherwise make available any portion of this software in any form to any third party without the prior express written approval of Multi-Tech Systems, Inc.

Licensee is hereby informed that this software contains confidential, proprietary and valuable trade secrets developed by or licensed to Multi-Tech Systems, Inc. and agrees that sole ownership shall remain with Multi-Tech Systems, Inc. The Software is copyrighted. Except as provided herein, the Software and documentation supplied under this agreement may not be copied, reproduced, published, licensed, sublicensed, distributed, transferred, or made available in any form, in whole or in part, to others without expressed written permission of Multi-Tech Systems, Inc. Copies of the software may be made to replace worn or deteriorated copy for archive or emergency backup procedures.

Licensee agrees to implement sufficient security measures to protect Multi-Tech Systems, Inc. proprietary interests and not to allow the use, copying, or transfer by any means, other than in accordance with this agreement.

Licensee agrees that any breach of this agreement will be damaging to Multi-Tech Systems, Inc.

Tech Support

Multi-Tech has an excellent staff of technical support personnel available to help you get the most out of your Multi-Tech product. If you have questions about the operation of this unit, call 1-800-972-2439. Please fill out the MultiMobile PC Card information below and have it available when you call. If your PC Card requires service, the tech support specialist will guide you on how to send it in (see Service section).

Please complete the following information on your MultiMobile PC Card. Having this information readily available helps tech support in answering your questions. (The same information is requested on the Warranty Registration card.

Model number: _____

Serial number: _____

Software version: _____

Model and serial numbers are located on the label on the MultiMobile. Software version numbers are printed on the diskette labels.

Before calling Tech Support, please check your cables to ensure they are connected properly; then note the status of your MultiMobile including status indicators, screen messages, diagnostic test results, problems with a specific application, etc. Use the space below to note the PC Card status:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Service

If your tech support specialist decides that service is required, you can send your MultiMobile to our factory (freight prepaid). Return shipping charges will be paid by Multi-Tech Systems (within North America).

Include the following with your MultiMobile:

- A description of the problem
- Return billing and return shipping addresses
- Contact name and phone number
- Check or purchase order number for payment, if the MultiMobile is out of warranty (The standard repair charge for this MultiMobile is $95. This price is valid at the time of this publication, but could change in the future. Check with your technical support specialist.)
- If possible, note the name of the technical support specialist with whom you spoke.

If you need to inquire about the status of the returned product, be prepared to provide the *serial number* of the product sent.

Send the MultiMobile PC Card to the following address:

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112
Attn: Service or Repairs

You also should check with the your MultiMobile supplier on the availability of local service and/or loaner units in your area.

About the Multi-Tech BBS

For customers who do not have Internet access, Multi-Tech maintains a bulletin board system (BBS) that mirrors its FTP site. Information available from the BBS includes new product information, product upgrade files, and problem-solving tips. The phone number for the Multi-Tech BBS is (612) 785-3702 (international or local) or (800) 392-2432 (USA and Canada).

You can access Multi-Tech's BBS with any asynchronous modem operating at 1200 bps to 33,600 bps at a setting of 8 bits, no parity, and 1 stop bit (8-N-1).

To logon to the Multi-Tech BBS

1. Set your communications program to 8-N-1.
2. Dial our BBS at (800) 392-2432 (USA and Canada) or (612) 785-3702 (international and local).
3. At the prompts, type your first name, last name, and password; then press ENTER. If you are a first time caller, the BBS asks if your name is spelled correctly. If you answer yes, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
4. Press ENTER until the Main Menu appears. From the Main Menu you have access to two areas: the Files Menu and News. For help on menu commands, type **?**.

To download a file

1. From the Main Menu, type **F** to access the Files Menu. Then type **D**.
2. Enter the name of the file you want to download from the BBS.
3. If a password is required, enter the password.
4. Answer **Y** or **N** to the automatic logoff question.
5. Select a file transfer protocal by typing the indicated letter, such as **Z** for Zmodem (the recommended protocol).
6. If you select Zmodem, the transfer begins automatically. If you select another protocol, you may have to initiate the transfer yourself. (In most data communicatons programs, the PAGE DOWN key initiates the download.)

7. When the download is complete, press ENTER to return to the File Menu.
8. To exit the BBS, type **G** and press ENTER.

If you don't know the file name

1. From the Main Menu, type **F** to access the Files Menu. For a list of file areas, type **L** and press ENTER. Then type **L** and press ENTER again. (If you don't type the second L, *all* of the files on the BBS appear.)
2. To mark each file area you want to examine, type its list number and press ENTER.
3. To list all the files in the selected file areas, type **L**. To go forward in the file list, type **C**. To go back, type **P**.
4. To mark one or more files for download, type **M** and press ENTER. Then type the list numbers of the files and press ENTER again.
5. Type **D**. A list of the files you marked appears. To edit the list, type **E**. Otherwise, type **D** again to start the download process.
6. Select a file transpfer protocol by typing the indicated letter, such as **Z** for Zmodem (the recommended protocol).
7. If you select Zmodem, the transfer begins automatically. If you select another protocol, you may have to initiate the transfer yourself. (In most data communicatons programs, the PAGE DOWN key initiates the download.)
7. When the download is complete, press ENTER to return to the File Menu.
8. To exit the BBS, type **G** and press ENTER.

About CompuServe

In addition to the BBS, Multi-Tech provides support through CompuServe's Modem Vendor Forum (GO MODEMVEN). Refer to your CompuServe documentation for special operating procedures.

About the Internet

Multi-Tech is a commercial user on the Internet, and we retrieve messages from our customers on a periodic basis. If you prefer to receive technical support via the Internet, contact Tech Support at the following address:

htt://www.multitech.com/support

To email a question to Tech Support:

http://www.multitech.com/_forms/email_tech_support.htm

Multi-Tech's home page on the World Wide Web:

http://www.multitech.com.

About the Multi-Tech Fax-Back System

Multi-Tech's fax-back system provides 24-hour access to sales, marketing, and technical literature for customers in the USA. Dial (612) 717-5888, follow the voice prompts, and enter the document number for either the *Sales and Marketing* catalog or the *Technical Support* catalog of available documents. For convenience, write your fax number in the following space: _____.

From the Sales and Marketing catalog, you can request newsletters, white papers, press releases, brochures, and other marketing literature to be faxed to you. From the Technical Support catalog, you can request basic MultiMobile operation information and troubleshooting guides. With either catalog, simply enter the applicable FB Doc. # of the literature you want to receive.

MultiMobile™

Appendix

MultiTech® Systems

Appendix A: *Pin Assignments*

The Multifunction ISDN/Modem PC Card comes with U-interface or S/T-interface network connection cable and analog fax/modem DAA. The U-interface connection cable is for direct ISDN line connection, which does not need any extra ISDN NT1 device. The S/T-interface connection cable is for connecting to NT1. The U- and ST-interface both use an RJ-45 phone jack but have different pin assignments. The bundled RJ-45 phone cord can be used for both U- or S/T-interface connections. The fax/modem DAA uses an RJ-11 phone jack to connect to PSTN (analog telephone line) directly.

The RJ-45 Pin-outs of U-interface

Pin 1	Not connected
Pin 2	Not connected
Pin 3	Not connected
Pin 4	Signal
Pin 5	Signal
Pin 6	Not connected
Pin 7	Not connected
Pin 8	Not connected

The RJ-45 Pin-outs of S/T-interface

Pin 1	Not connected
Pin 2	Not connected
Pin 3	Transmit signal (T1)
Pin 4	Receive signal (R1)
Pin 5	Receive signal (R2)
Pin 6	Transmit signal (T2)
Pin 7	Not connected
Pin 8	Not connected

The RJ-11 Pin-outs of Analog Fax/Modem DAA

Pin 1	Not connected
Pin 2	Not connected
Pin 3	Tip
Pin 4	Ring
Pin 5	Not connected
Pin 6	Not connected

Appendix B: *AT Command Summary, S-Register Summary, and Result Codes Summary*

AT Commands

How To Use AT Commands

Usually, your data communication software controls the MultiMobile for you. However, you may also want to use AT commands, which give you complete control over your MultiMobile. Be careful using these commands because they can cause your software to loose its ability to control the MultiMobile. If you find that an AT command causes a problem, turn the computer off and then back on to reset AT commands to the factory default settings. You can also type **AT&F** to return to the factory default setting.

To use an AT command, you must

1. Run your communication software.
2. Configure the software for the appropriate COM port and IRQ settings, if necessary.
3. Select Terminal mode (aka *Command mode*, *Local mode*, or *Direct mode*). This is the mode where most data communication software packages start. Type the AT command and press **Enter**.
   For example, type **ATH0** and press **Enter** to hang up the MultiMobile connection or **AT&V** and press **Enter** to display the current configuration.

Most AT commands can be entered in *strings* (on the same command line) without spaces between the individual commands. Example: **AT&VH0 <Enter>**. As shown in the example, it is not necessary to put spaces between the commands. So, there are no spaces between **AT**, **&V**, and **H0**.

The MultiMobile usually returns a response (or *Result Code*) at the next line if it understands the command. The response usually is **OK** or **ERROR** unless the AT command provides other (extended) messages.

COMMAND	OPTIONS	FUNCTION & DESCRIPTION
ATA		Go off-hook (answer incoming call immediately)
ATB?		Display V.110 user rate for outgoing calls
ATB*n*	***n*=0**	V.110 user rate: 600 bps
	***n*=1**	V.110 user rate: 1200 bps
	***n*=2**	V.110 user rate: 2400 bps
	***n*=3**	V.110 user rate: 4800 bps
	***n*=4**	V.110 user rate: 9600 bps
	***n*=5**	V.110 user rate: 19200 bps
	***n*=6**	V.110 user rate: 38400 bps
	***n*=7**	V.110 user rate: 48000 bps
	***n*=8**	V.110 user rate: 57600 bps (for Japan only)
ATD	**<number>**	Dial ISDN phone number
ATD	**<number>**	Make ISDN data calls, e.g., ATD5551000
ATDM	**<number>**	Make modem calls over ISDN line, e.g., ATDM5551000
ATDT	**<number>**	Dial ISDN phone number, e.g., ATDT5551000
ATDV	**<number>**	Make ISDN phone voice calls, e.g.,ATDV5551000
ATDS*n*		Dial pre-stored phone number (*n*=0, 1, 2,…) Refer to AT&Zn=<ISDN_phone_number> command for phone number storage.
ATDL		Redial last ISDN phone number
ATE*n*	***n*=0**	Echo in command mode is disabled.
	***n*=1**	Echo in command mode is enabled.
ATH		Hang up ISDN link
ATH1		Disconnect ISDN phone voice calls
ATH3		Disconnect ISDN data calls and ISDN phone voice calls
ATH4		Restart ISDN layer 2 link. Enter this command when SPID numbers are changed.
AT&G1		Switch from analog telephone line link to ISDN link

COMMAND	OPTIONS	FUNCTION & DESCRIPTION
ATH5		View ISDN TA status **Line Lost:** ISDN phone line not properly attached **SPID Fail**: Both SPID numbers are incorrect **1 SPID Ready**: One of SPIDs is incorrect **2 SPID Ready**: ISDN TA OK
ATI3		View driver version
ATO		Return to connection on-line mode
AT!C0=*n*		ISDN D-channel protocol & switches selection
	***n*=00**	AT&T 5ESS Custom
	***n*=01**	Northern Telecom DMS-100
	***n*=02**	ETSI Europe ISDN
	***n*=05**	U.S. National ISDN-1 (NI-1), factory default
AT!C6=*n*		Set Service Profile ID 0 (SPID 0), where *n* is SPID number, up to 20 characters. Example: ISDN phone number: 5551000 **SPID 0:** 0555100001
AT!C2=*n*		Set Service Profile ID 1 (SPID 1), where *n* is xSPID number, up to 20 characters. Example: ISDN phone number: 5553000 **SPID 1:** 0555300001
AT!N0=*n*		Set ISDN Directory Number 0 (DN 0), where *n* is ISDN phone number. Example: DN 0: 5551000 => *n*=5551000
AT!N1=*n*		Set ISDN Directory Number 1 (DN 1), where *n* is ISDN phone number. Example:DN 1: 5553000 => *n*=5553000
AT!Q=*n*	***n*=0**	Set B-channel to 64K
	***n*=4**	Set B-channel to 56K
AT!V=*n*	***n*=0**	Incoming voice-grade calls answered by ISDN phone
	***n*=1**	Incoming voice-grade calls answered by modem (Modem over ISDN)
	***n*=2**	Enable audio speech

COMMAND	OPTIONS	FUNCTION & DESCRIPTION
	***n*=3**	Enable 3.1 KHz audio
	***n*=4**	Select u-law voice encoding (for European countries and most countries outside USA)
	***n*=5**	Select A-law voice encoding (for USA)
AT!Z=*n*		B-channel protocol selection
	***n*=05**	V.120
	***n*=06**	V.110
AT&F		Load factory default profile to active RAM.
AT&J0		Use two different ISDN phone numbers for making Multi-Link PPP calls.
AT&J1		Use single ISDN phone number for Multi-Link PPP connections
AT&K		Verifies TA hardware function; entering AT&K invokes hardware is *OK* or *BAD*.

Note: *The* ***!*** *command modifier is used to change configuration parameters that change infrequently—typically, only once at installation. Using these* ***!*** *commands during normal operation with the telephone line connected to the TA can cause unpredictable results. It is best to enter the* ***!*** *command when the TA is not connected to the ISDN network to avoid confusion between the TA and ISDN network. The recommended procedure for using* ***!*** *commands is as follows:*

1. *Disconnect ISDN phone line from the TA.*
2. *Enter* ***!*** *commands to set the correct value for* ***!*** *command-related parameters.*
3. *Enter AT&Wn command to store the parameters changed during step 2 in the user profile.*
4. *Reconnect ISDN phone line.*
5. *Reset or reboot ISDN subsystem with updated configuration parameters.*

AT&F	Load factory default profile to active RAM
AT&G	Switch from ISDN link to analog telephone line link
AT&J0	Use two different ISDN phone numbers for making Multi-Link PPP calls
AT&J1	Use single ISDN phone number for Multi-Link PPP connections
AT&K	Check PC Card hardware status

COMMAND	OPTIONS	FUNCTION & DESCRIPTION
AT&L0		Load user profile 0 to active RAM
AT&L1		Load user profile 1 to active RAM
AT&L2		Load user profile 2 to active RAM
AT&L3		Load user profile 3 to active RAM
AT&L4		Load user profile 4 to active RAM
AT&L5		Load user profile 5 to active RAM
AT&L6		Load user profile 6 to active RAM
AT&L7		Load user profile 7 to active RAM
AT&L8		Load user profile 8 to active RAM
AT&L9		Load user profile 9 to active RAM
AT&N0=0		Set Single-Link mode for Async to Sync PPP Conversion
AT&N0=1		Set Multi-Link mode for Async to Sync PP Conversion
AT&P0		Copy user profile 0 to profile E and set it as power-up profile
AT&P1		Copy user profile 1 to profile E and set it as power-up profile.
AT&P2		Copy user profile 2 to profile E and set it as power-up profile
AT&P3		Copy user profile 3 to profile E and set it as power-up profile
AT&P4		Copy user profile 4 to profile E and set it as power-up profile
AT&P5		Copy user profile 5 to profile E and set it as power-up profile
AT&P6		Copy user profile 6 to profile E and set it as power-up profile
AT&P7		Copy user profile 7 to profile E and set it as power-up profile
AT&P8		Copy user profile 8 to profile E and set as it power-up profile

COMMAND	OPTIONS	FUNCTION & DESCRIPTION
AT&W0		Save current active settings in RAM to user profile 0
AT&W1		Save current active settings in RAM to user profile 1
AT&W2		Save current active settings in RAM to user profile 2
AT&W3		Save current active settings in RAM to user profile 3
AT&W4		Save current active settings in RAM to user profile 4
AT&W5		Save current active settings in RAM to user profile 5
AT&W6		Save current active settings in RAM to user profile 6
AT&W7		Save current active settings in RAM to user profile 7
AT&W8		Save current active settings in RAM to user profile 8
AT&W9		Save current active settings in RAM to user profile E
AT&Z0		Set Secondary Dial Number for Async to Sync Multi-link PPP Mode
AT&V		Display current configuration
AT&Zn=x		Store phone number as x
	n	index number 0, 1, 2….
	x	saved phone number

S-Register Summary

S-registers are sections of memory where values are stored that affect how the TA operates. They are called S-registers because each begins with the character *S*. Use the **S** command to assign a value or to read the current value of an S-register.

To assign a value to an S-register, use the command **Sr=N** where **r** is the register number and **n** is the value to assign to the register. Example: **S7=45**.

To read an S-register value, use the command **Sr?** where **r** is the register number. Example: **ATS7?**

S-REGISTER	RANGE	DEFAULT	DESCRIPTION
SO	0-255	0	Sets number of rings before modem answers
S1	0-255	0	Counts rings that have occurred.
S2	0-255	43	Sets Escape Code character (default: + sign)
S3	0-127	13	Sets RETURN character (default: CTRL M)
S4	0-127	10	Sets LINE FEED character (default: CTRL J)
S5	0-23,127	8	Sets BACKSPACE character (default: CTRL H)
S6			Determines wait time for dial tone
	2-65	2	International version
	4-65	4	Japanese version
S7			Determines wait time before going off-hook
	2-255	50	International version
	35-59	50	Japanese version
S8	0-65	2	Sets pause time of comma in dial command
S10	1-255	20	Sets wait time before going off-hook after loss of carrier
S11	50-150	95	Sets duration and spacing in tone-dialing
S12	0-255	50	Sets time for escape character to be valid
S28	0-255	1	Enables/disables V. 34 0: disabled 1-255: enabled
S30	0-90	0	Sets time for inactivity timer to disconnect

S-REGISTER	RANGE	DEFAULT	DESCRIPTION
S36		7	Sets negotiation fallback options
	0,2		Hangs up
	1,3		Falls back to async connection
	4,6		Attempts MNP mode and if fails, hangs up
	5,7		Attempts MNP mode and if fails, falls back to async connection
S37		0	Sets desired DCE speed (line speed)
	0		Maximum modem speed
	2		Attempts 1200/75 bps connection
	3		Attempts 300 bps connection
	5		Attempts 1200 bps connection
	6		Attempts 2400 bps connection
	7		Attempts 4800 bps connection
	8		Attempts 7200 bps connection
	9		Attempts 9600 bps connection
	10		Attempts 12000 bps connection
	11		Attempts 14400 bps connection
	12		Attempts 16800 bps connection
	13		Attempts 19200 bps connection
	14		Attempts 21600 bps connection
	15		Attempts 24000 bps connection
	16		Attempts 26400 bps connection
	17		Attempts 28800 bps connection
	18		Attempts 31200 bps connection
	19		Attempts 33600 bps connection
S38 (K56flex)		1	Sets maximum 56K downstream speed
	0		Disables 56K
	1		Enables 56K (auto-speed & maximum speed)
	2		Attempts 32000 bps connection
	3		Attempts 34000 bps connection
	4		Attempts 36000 bps connection
	5		Attempts 38000 bps connection
	6		Attempts 40000 bps connection
	7		Attempts 42000 bps connection
	8		Attempts 44000 bps connection
	9		Attempts 46000 bps connection

S-REGISTER	RANGE	DEFAULT	DESCRIPTION
	l0		Attempts 48000 bps connection
	l1		Attempts 50000 bps connection
	l2		Attempts 52000 bps connection
	l3		Attempts 54000 bps connection
	l4		Attempts 56000 bps connection
S38 (V.90)			V.90 mode downstream rate (in bps)
	0		V.90 disabled
	1		V.90 autorate
	2		29333
	3		30666
	4		32000
	5		33333
	6		34666
	7		36000
	8		37333
	9		38666
	10		40000
	11		41333
	12		42666
	13		44000
	14		45333
	15		46666
	16		48000
	17		49333
	18		50666
	19		52000
	20		53333
	21		54666
	22		56000

S-REGISTER	RANGE	DEFAULT	DESCRIPTION
S48	7,128		LAPM error control and feature negotiation S48=7—Negotiation enabled S48=128—Negotiation disabled; forces immediate fallback options specified in S36 S36=0 or 2 and S48=7—LAPM or hang up S36=0 or 2 and S48=128—Don't use S36=1 or 3 and S48=7—LAPM or async S36=1 or 3 and S48=128—Async S36=4 or 6 and S48=7—LAPM, MNP, or
		hang up	
			S36=4 or 6 and S48=128—MNP or hang up S36=5 or 7 and S48=7—LAPM, MNP, or
		async	
			S36=5 or 7 and S48=128—MNP or hang up
S89	0,5-60	30	Sleep mode control timer
S91	6-15	14	Transmitting power level adjustment (Japanese version only) Range: -6 dBm to -115 dBm Default: -15 dBm

Result Code Summary

Terse	*Verbose*
0	OK
1	Connect
2	Ring
3	No carrier
4	Error
5	Connect 1200*
6	No dial tone
7	Busy
8	No Answer
10	Connect 2400 EC*
11	Connect 4800 EC*
12	Connect 9600 EC*
13	Connect 14400 EC*
14	Connect 19200 EC*
18	Connect 57600 EC*
24	Connect 7200 EC*
25	Connect 12000 EC*
28	Connect 38400 EC*
40	Connect 300 EC*
55	Connect 21600 EC*
56	Connect 24000 EC*
57	Connect 26400 EC*
58	Connect 28800 EC*
59	Connect 31200 EC*
60	Connect 33600 EC*
70	Connect 32000 EC*
71	Connect 34000 EC*

*EC only appears when the Extended Result Code options are enabled

Terse	Verbose
72	Connect 36000 EC*
73	Connect 38000 EC*
74	Connect 40000 EC*
75	Connect 42000 EC*
76	Connect 44000 EC*
77	Connect 46000 EC*
78	Connect 48000 EC*
79	Connect 50000 EC*
80	Connect 52000 EC*
81	Connect 54000 EC*
82	Connect 56000 EC*
86	Connect 16800 EC*
87	Connect 115200 EC*
88	Delayed**
89	Blacklisted**
90	Blacklist full**
100	Connect 28000
101	Connect 29333
102	Connect 30666
103	Connect 33333
104	Connect 34666
105	Connect 37333
106	Connect 38666
107	Connect 41333
108	Connect 42666
109	Connect 45333
110	Connect 46666
111	Connect 49333
112	Connect 50666
113	Connect 53333
114	Connect 54666

*EC only appears when the Extended Result Code options are enabled

**For Blacklisting function enabled countries only

Appendix C*: Upgrade Procedures*

Introduction

Your modem is controlled by semipermanent software called *firmware* that is stored in flash memory. Firmware is nonvolatile; that is, it remains stored in memory when the modem is turned off. However, it can be changed by either the manufacturer or the user as bugs are fixed or new features are added.

Since the firmware in your modem is stored in flash memory, you can upgrade it quickly yourself using the following procedures.

Upgrade Overview

The upgrade procedure consists of the steps below, which are described in greater detail in the following sections.

1. Identify the model number and firmware version of your modem.
2. Identify the current version of the firmware at the Multi-Tech Web site or BBS. If your modem already has the current firmware, there is no need to update it.
3. Download the upgrade file for your modem.
4. Extract the firmware .HEX file and the appropriate flash upgrade program from the file you downloaded.
5. Document and clear your stored parameters.
6. Upgrade the modem's firmware using the .HEX file and the flash upgrade program.
7. Restore your parameters.

Step 1: Identify the Modem Firmware

You must know the model number and firmware version of your Multi-Tech modem to know whether you should update it.

1. Run your favorite terminal program. If you are using Windows 95 or Windows NT, you can use HyperTerminal. If you are using Windows 3.11, you can use Windows Terminal.
2. In the program's terminal window, type **AT&F**. Even if you cannot see the **AT&F** command on your screen, be sure to type it completely and then press **Enter**.

3. Now type **ATI** and record your results. The model number and firmware version should appear similar to the format below:

   LT K56FLEX 1.1 MT5634ZBAV Serial Data/Fax/Voice Modem Version 4.07a

Step 2: Identify the Current Firmware Version

Identify the current version of the firmware at the Multi-Tech Web site or BBS. If your modem already has the current firmware, there is no need to update it.

Multi-Tech Web Site

1. Using your favorite Web browser, go to http://www.multitech.com/support/firmware.htm.
2. Scroll down to the table with your modem model number (non-USA firmware must be obtained directly from the ftp site or BBS at this time).
3. Look at the Current Revision number for your modem.
4. If the Current Revision number matches the firmware version number found in Step 1: Identify the Modem Firmware, your modem has the current firmware version and does not need to be updated.
5. If the Current Revision number is larger than the firmware version number found in Step 1: Identify the Modem Firmware, your modem has an older firmware version. Continue with Step 3: Download the Upgrade File.

Multi-Tech BBS

1. Run your favorite terminal program and dial in to the Multi-Tech BBS at 800-392-2432 (North America) or 612-785-3702 (local and international).
2. When the BBS welcome screen appears, type your first name, last name, and password following the prompts. If you are a first-time caller, the BBS asks if your name is spelled correctly. If you answer **Y**, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
3. Press **Enter** until the Main Menu appears where you have access to two areas: the Files Menu and News. For help with menu commands, type **?**.
4. In the Main Menu, type **F** and press **Enter** to access the Files Menu.

5. In the Files Menu, type **L** and press **Enter**, then type **L** and press **Enter** again. A two-column list of file areas appears.
6. Press **Enter** until the modem firmware area for your country appears.
7. Type the number of the modem firmware area for your country and press **Enter**.
8. Type **L** and press **Enter** to list the files in the selected area.
9. Press **Enter** until your modem model number appears.
10. Look at the version number for your modem.
11. If the version number matches the firmware version number found in *Step 1: Identify the Modem Firmware*, your modem has the current firmware version and does not need to be updated.
12. If the version number is larger than the firmware version number found in *Step 1: Identify the Modem Firmware*, your modem has an older firmware version. Continue with *Step 3: Download the Upgrade File*.

Step 3: Download the Upgrade File

Multi-Tech Web Site

1. If you are not already at the Firmware page of the Multi-Tech Web site, follow procedures in *Step 2: Identify the Current Firmware*.
2. Click the upgrade file name for your modem and save the file to a temporary location on your hard disk.

Multi-Tech BBS

1. If you have not already found the upgrade file for your modem on the Multi-Tech BBS, follow procedures in *Step 2: Identify the Current Firmware*.
2. Type the number of the upgrade file for your modem. Press **Enter**.
3. Type **D** and press **Enter** to list the file to download.
4. If the correct file is listed, press **Enter**; otherwise use the **Q** command to return to the previous menu.
5. Type **Z** and press **Enter** to select the Zmodem transfer protocol.
6. The download begins automatically. As the file copies to your hard disk, a dialog box reports on the progress of the download.
7. To log off BBS, press **Enter**, type **G** for *good-bye*, and press **Enter** twice more.

Step 4: Extract the Upgrade Files

1. Move downloaded upgrade file to a temporary directory or folder on your hard disk.
2. The file is a self-extracting archive. Extract files by typing the upgrade file name in DOS or double-clicking it in Windows. The extracted files include a .HEX file, which contains upgrade data, and one flash program each for DOS, Windows 3.1/95, and Windows NT.

Step 5: Clear Your Stored Paramenters

Before you flash your modem, it is important that you issue the **AT&W1Z** command to it to clear any stored parameters. You should also record the parameters that currently are stored in your modem so you can reprogram it after flashing.

1. Run your favorite terminal program. If you are using Windows 95 or Windows NT, you can use HyperTerminal. If you are using Windows 3.11, you can use Windows Terminal.
2. In the program's terminal window, type **AT&V** and press **Enter** to list your modem's current parameters.
3. Record your parameters by saving the screens and sending them to your printer.
4. Type **AT&W1Z** and press **Enter** to clear your stored parameters and reset your modem to factory default.
5. Close the terminal program.

Step 6: Upgrade the Modem's Firmware

Use one of the flash programs that you extracted to upgrade your modem. There are three flash programs: DOSFLASH.ZIP for DOS or Windows 3.1, FLASHWIN for Windows 3.1 or Windows 95, and FLASHNT for Windows 95 or Windows NT 4.0.

DOSFLASH

1. Copy DOSFLASH.ZIP and the downloaded .HEX file to a temporary directory.
2. Unzip DOSFLASH.ZIP.
3. To upgrade the modem, run DOSFLASH using the command **dflash10 *x y***, where *x* is the number of the port the modem is connected to and *y* is the IRQ number for the port. The IRQ number is optional if you are using the standard IRQ number for the port. For example, if your modem is connected to COM2 and COM2 has IRQ 3 assigned to it (which is standard for that port), type either **dflash10 2** or **dflash10 2 3**.

FLASHWIN

1. Copy FLASHWIN.ZIP and the downloaded .HEX file to a temporary directory.
2. Unzip FLASHWIN.ZIP.
3. Run FLASHWIN by double-clicking on its icon or file name.
4. Select the COM port your modem is on and the speed at which you want to program.
5. Enter the name and path of the *.HEX file you want to load into the modem.
6. When you have verified your selections, click **Perform Flash** to load the firmware into the modem.
7. When **Loading Status** reaches 100%, the modem has been upgraded and you can close FLASHWIN.

FLASHNT

1. Copy FLASHNT.ZIP and the downloaded .HEX file to a temporary directory.
2. Unzip FLASHNT.ZIP.
3. Run FLASHNT.EXE by double-clicking its icon or file name.
4. Select the COM port your modem is on and the speed that you want to program at. The default is 57,600 bps.
5. Verify that the selected firmware file (*.HEX) is the correct one. If necessary, use the **Browse** button to find the correct file.

6. Click **Finish** to begin upgrading your modem.
7. When the flash upgrade is complete, the message *Flash Loader has completed* appears.
8. Close the program.

Step 7: Restore Your Parameters

Your modem is now updated. You can now open your terminal program to reprogram your modem parameters, if necessary, or to confirm the update by typing **ATI** in the terminal window.

Appendix D: *Regulatory Agency Information*

FCC Part 68 Telecom

1. This equipment complies with Part 68 of the Federal Communications Commission Rules. On the outside surface of this equipment is a label that contains, among other information, the FCC registration number . This information must be provided to the telephone company.
2. As indicated below, the suitable jack (Universal Service Order Code connecting arrangement) for this equipment is shown. If applicable, the facility interface codes (FIC) and service order codes (SOC) are shown.
3. An FCC-compliant telephone and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. See installation instructions for details.
4. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But, if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
5. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order to for you to make necessary modifications to maintain uninterrupted service.
6. If trouble is experienced with this equipment (the model of which is indicated below), please contact Multi-Tech Systems, Inc. at the address shown below for details of how to have repairs made. If the equipment is causing harm to the network, the telephone company may request you to remove the equipment from the network until the problem is resolved.
7. No repairs are to be made by you. Repairs are to be made only by Multi-Tech Systems or its licensees. Unauthorized repairs void registration and warranty.
8. Manufacturer: Multi-Tech Systems, Inc.

   Trade Name: MultiMobile
   Model Number: MT56128ZLX-NT

FCC Registration #: AU7USA-32747-DD-E
FCC Registration #: AU7USA-32746-M5-E
Ringer Equivalence Number (REN): 0.4B
Modular Jack (USOC): RJ-11/RJ-45
FIC: 04DU5-64
SOC: 6.0F
Service Center in USA: Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112
Phone: (612) 785-3500
Fax: (612) 785-9874

FAX Branding Statement

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains the following information:

- Date and time the message is sent
- Identification of the business or other entity, or individual sending the message
- Telephone number of the sending machine or such business, other entity, or individual

This information is to appear in a margin at the top or bottom of each transmitted page or on the first page of the transmission. (Adding this information in the margin is referred to as *fax branding*.)

Since any number of fax software packages can be used with this product, the user must refer to the fax software manual for setup details. Typically, the fax branding information must be entered via the configuration menu of the software.

FCC Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

Canadian Limitations Notice

Notice: The ringer equivalence number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination of a interface may consist of any combination of devices subject only to the requirement that the sum of the ringer equivalence numbers of all the devices does not exceed five.

Notice: The Industry Canada label identifies certificated equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Australian Modem Warning Notice

Modems connected to the Australian telecommunications network must have a valid AUSTEL permit. This modem has been specifically configured to ensure compliance with AUSTEL Standards. The following commands can affect compliance and must not be set outside the permissible range.

Modem Commands:

Command	Default	Permissible Range
A:	-	Do not use
ATB	B0	Do not change
AT&G	&G2	Do not change
AT&P	&P1	Do not change
ATSn	see table below	

Command	Default	Permissible Range
S6	4	2–5

Call Attempts/Retries:

Applications software shall be configured so that no more than three attempts are made to establish a connection to a given number. (Note: if the modem can detect service tones, up to 10 attempts can be made). There must be at least two seconds between call attempts. If the call sequence is unsuccessful, there shall be a delay of at least 30 minutes before attempting to call the number again.

***Warning**: Failure to set the modem, and any communications software used with the modem, to the values shown above will result in the modem being operated in a non-compliant manner. Consequently, there would be no permit in force for this equipment, and the Telecommunications Act 1991 prescribes a penalty of $12,000 for the connection of non-permitted equipment.*

Use of Supplied Power Transformer

The power transformer supplied with the modem is the only one that should be used. Use of any other transformer could cause damage to the modem.

For Voice Modems:

Distortion may be generated because of low bit rate voice, and reduced voice quality may result.

***Warning**: For safety reasons, only connect AUSTEL permitted or AUSTEL certified equipment.*

Protection Against Contact with TNV Circuit (Internal PC Cards)

The protective cover is fastened to the modem card by means that will only allow a tool to remove the cover.

***Warning**: Removal of the protective cover will render the AUSTEL permit void. Use* of pulse dialing, when this equipment is connected to the same line as other equipment, may give rise to *bell tinkle* or noise and may also cause a false answer condition. Should such problems occur, the user should NOT contact the Telecom Faults Service.

New Zealand Telecom Warning Notice

Use of pulse dialing, when this equipment is connected to the same line as other equipment, may give rise to *bell tinkle* or noise and may also cause a false answer condition. Should such problems occur, the user should NOT contact the Telecom Faults Service.

The preferred method of dialing is to use DTMF tones, as this is faster than pulse (decadic) dialing and is readily available on almost all New Zealand telephone exchanges.

***Warning Notice:** No "111" or other calls can be made from this device during a main power failur*e.

Use of Supplied Power Transformer

The power transformer supplied with the modem is the only one that should be used. Use of any other transformer could cause damage to the modem.

Compliance with BABT Requirements

Approved for connection to telecommunications system specified in the instructions for use subject to the conditions set out in them.

Warning: *Interconnection directly, or by way of other apparatus, of ports marked "SAFETY WARNING see instructions for use" with ports marked or not so marked may produce hazardous conditions on the network. Advice should be obtained from a competent engineer before such a connection is made.*

The power required by the host and the total of all adapter cards installed within the host environment, together with any auxiliary apparatus, shall not exceed the power specification as stated in the Technical Reference Material of the host apparatus.

The power requirements for this MT56128ZLX-ST: Modem Operating Voltages: +5V, =5%, 290mA

Modem Power Consumption = 1.45W

It is essential that the PC card is fitted only in a compatible slot designed for PC cards/PCMCIA cards, containing only Safety Extra Low Voltages (SELV). Under normal conditions, the SELV limit is 42.2V peak a.c. or 60V d.c. If you have any doubt, seek advice from a competent engineer before installing the card.

This apparatus has been approved for the use of the following facilities:

- Auto-calling
- Loop disconnect and MF dialing
- Modem and facsimile features
- PBX operation
- High Speed Data and Fax performance

European Low Voltage Directive

When correctly installed and maintained, the modem will present no hazard to the user. When correctly installed the modem will be connected to the PSTN or a PW and to a Data Terminal Equipment (DTE), whose modem connections comply with ITU recommendation V28. The DTE connections are therefore taken to be safe voltages (less than ± 30 volts).

CE

EMC, Safety, and Terminal

Directive Compliance

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility.

and

Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits:

and

Council Directive 98/13/EC of 12 March 1998 on the approximation of the laws of Member States concerning telecommunications terminal and Satellite earth station equipment.

Commission Decision "CTR21"

This equipment has been approved to (Commission Decision "CTR21") for pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

In the event of problems, you should contact your equipment supplier in the first instance.

MultiMobile™

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MultiTech® Systems

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